OFFICE OF THE SCIENCE ADVISOR GUIDANCE

CHAPTER 1

DEFAULT EXPOSURE PARAMETERS

ABSTRACT

This guidance document lists some exposure parameters which may be used as default values in a human health risk assessment if no site-specific information exists for the parameter in question. These default exposure parameters are to be used for calculating reasonable maximum exposure (RME) estimates.

Principal Writers: A. Kimiko Klein, Ph.D.
Laura Valoppi, M.S.

TABLE OF CONTENTS

SECTION **PAGE**

1 INTRODUCTION

1.1 PURPOSE

This document provides guidance to the Department of Toxic Substances Control (DTSC) staff, responsible parties, and other interested parties on the acceptable default exposure parameters to be used when estimating reasonable maximum exposure (RME) intake values at hazardous waste sites or permitted facilities. The listing of these exposure parameters is intended to aid responsible parties and their contractors in preparing risk assessments and DTSC project managers and the public in evaluating risk assessments.

1.2 APPLICATION

The exposure parameters listed here should be used when no site-specific data are available or when there is no concensus on the appropriate parameter value. The values listed in Table 1 are excerpted from the U. S. Environmental Protection Agency (US EPA), Office of Solid Waste and Emergency Response (OSWER) Directive 9285.6-03 (March 25, 1991). The values listed in Table 2 are dermal exposure factors agreed upon by the DTSC as appropriate for use as upper-end values in a residential exposure scenario for a Preliminary Endangerment Assessment (PEA) and as RME in a human health risk assessment. These dermal values are either directly from or consistent with values listed in US EPA Dermal Exposure Assessment: Principles and Applications, Interim Report (1992).

1.3 LIMITATIONS

The DTSC encourages the use of scientifically justified site-specific data whenever possible in order to more accurately estimate the health risks associated with a site or facility. The listed exposure parameter values should be used when such data are not available or when calculating reasonable maximum exposure values.

2 DEFAULT EXPOSURE PARAMETERS[a]

2.1 TABLE 1, STANDARD DEFAULT EXPOSURE FACTORS[b]

Land Use	Exposure Pathway[c]	Daily Intake Rate	Exposure Frequency	Exposure Duration	Body Weight
Residential	Ingestion of Potable Water	2 liters	350 days/year	30 years	70 kg
	Ingestion of Soil and Dust	200 mg (child) 100 mg (adult)	350 days/year	6 years 24 years	15 kg (child) 70 kg (adult)
	Inhalation of Contaminants	20 cu.m (total) 15 cu.m (indoor)	350 days/year	30 years	70 kg
Commercial/ Industrial	Ingestion of Potable Water	1 liter	250 days/year	25 years	70 kg
	Ingestion of Soil and Dust	50 mg	250 days/year	25 years	70 kg
	Inhalation of Contaminants	20 cu.m/workday	250 days/year	25 years	70 kg
Agricultural	Ingestion of Potable Water	2 liters	350 days/year	30 years	70 kg
	Ingestion of Soil and Dust	200 mg (child) 100 mg (adult)	350 days/year	6 years 24 years	15 kg (child) 70 kg (adult)

	Inhalation of Contaminants	20 cu.m (total) 15 cu.m (indoor)	350 days/year	30 years	70 kg
	Consumption of Homegrown Produce	42 g (fruit) 80 g (vegetable)	350 days/year	30 years	70 kg
Recreational	Consumption of Locally Caught Fish	54 g	350 days/year	30 years	70 kg

[a] From U.S. EPA OSWER Directive 9285.6-03, March 25, 1991, Human Health Evaluation Manual, Supplemental Guidance, Standard Default Exposure Factors.

[b] Factors presented are those that should generally be used to assess exposures associated with a designated land use. Site-specific data may warrant deviation from these values; however, use of alternate values should be justified and documented in the risk assessment report.

[c] Listed pathways may not be relevant for all sites and other exposure pathways may need to be evaluated due to site conditions.

July 1992

Interim Final

2.2 TABLE 2, DERMAL EXPOSURE FACTORS

Skin surface area exposed (SA), cm^2/day:

Adult - 5,800 (head, hands, forearms, lower legs) for adults (US EPA, 1992)
Child - 2,000 (head, hands, forearms, lower legs) for age 1 to 6 years, (US EPA, 1992).

Exposure frequency (EF), d/year:

Child - 7 events/week, 350 days/year for age 1 to 6 years or 350 d/year.
Adult - 2 events/week, 350 days/year for age 7 to 31 years or 100 d/year.

Note: These EF values are based on DTSC best professional judgment, and are compatible with US EPA, 1992.

Soil adherence factor (AF), mg/cm^2:

- 1.0 (US EPA, 1992).

WATER (showering):

Skin surface area exposed (SA), cm^2/day:

- 23,000 cm^2, upper bound, whole-body value (US EPA, 1992).

Exposure frequency (EF), d/year, and exposure time (ET), hrs./d:

- ET = 0.25 hrs/day,(15 minutes; EPA, 1992)
- EF = 350 days/year (EPA, 1991).

REFERENCES

U.S. EPA. 1989. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual (Part A). Interim Final. Office of Solid Waste and Emergency Response. Washington, DC. Directive 9285.7-01a.

U.S. EPA. 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors". Office of Solid Waste and Emergency Response. Washington, DC. Directive 9285.6-03.

U.S. EPA. 1992. Dermal Exposure Assessment: Principles and Applications, Interim Report.